PALEONTOLOGY.—*Notes on the ammonite genus* Karstenia *Hyatt.*[1] ERNEST C. H. ROSCHEN, Johns Hopkins University. (Communicated by JOHN B. REESIDE, JR.)

The genus *Karstenia* was proposed by Hyatt[2] in 1903 (as *Carstenia*) with *Ammonites lindigi* Karsten as genotype. In a revision of the old genus *Pulchellia,* Hyatt recognized two families, the *Heinziidae,* including the genus *Karstenia,* and the *Pulchelliidae.* The *Heinziidae* consisted of those forms in which the costae terminated at the venter in a single or double row of tubercles, elongated in the direction of coiling; and the *Pulchelliidae* included the highly compressed forms with a very narrow, or closed umbilicus. At that time Hyatt stated that the new genus, *Karstenia,* is characterized in the early stages of life by "coarse costae with double terminations becoming dichotomous at the middle lateral line and having a line of nodes at their junctions. These [nodes] are continued later on the single costae when these appear." The forms are stout, have a double row of outer tubercles close together on the ventral line, and the ventral furrow is narrow in young forms but later broadens and becomes similar to that of *Pulchellia* (= *Gerhardtia* Hyatt) *galeatoides* Karsten. In addition to the genotype, Hyatt included in *Karstenia* the species *Pulchellia caicedi* (Karsten), *P. subcaicedi* Sayn, *P. galeata* (D'Orbigny, not Von Buch), and *P. provincialis* Gerhart (=*Karstenia tuberculata* Hyatt).

Douville[3] did not accept Hyatt's division of the *Pulchelliidae* into two families, nor did he consider Hyatt's new genus *Karstenia* to be of more than sub-generic importance. In a revision of the genus *Pulchellia* in 1920 Gignoux[4] also did not accept the genus *Karstenia* and placed Hyatt's genotype, *Pulchellia lindigi* (Karsten), in a subdivision of the *Pulchellia,* the group of *Pulchellia* s. s. (tuberculées Gignoux), characterized by *P. provincialis* (D'Orbigny). In 1924 Collet[5] described a group of ammonites from the Barremian of Colombia in which are strongly emphasized the characteristic differences

[1] Received April 13, 1929.

[2] A. HYATT. *Pseudoceratites of the Cretaceous.* U. S. Geol. Surv. Mon. 44: 133–134. 1903.

[3] H. DOUVILLÉ. *Evolution et classification des Pulchellidés.* Bull. Soc. géol. France 11 (4): 285–320. 1911.

[4] W. KILLIAN, M. GIGNOUX, and others. *Contributions à l'étude des céphalopodes paleocrétacés du Sud-Est de la France.* Mém. Carte géol. France, pp. 135–166. Paris, 1920.

[5] L. W. COLLET. *Sur quelques ammonites du Barrémian de Colombie.* Ecologae. Geol. Helvetiae 18: 485–493. 1924.

in the growth of *Karstenia lindigi* (Karsten) as compared with representatives of true *Pulchellia*. He accepted Hyatt's genus *Karstenia* as valid.

This generic separation seems to be well founded, as the forms belonging to the genus *Karstenia* have stout whorls throughout their development and do not exhibit at any stage of growth the compressed whorls characteristic of the ontogeny of *Pulchellia*. As remarked by Collet, in the adult stages *Karstenia lindigi* (Karsten) converges toward *Pulchellia provincialis* and *P. galeatoides*.

During the examination of a collection of ammonites from Ubaté, Cundinamarca, Colombia, made by Dr. M. A. Rollot and presented by him to the U. S. National Museum, one well preserved specimen of *Karstenia lindigi* (Karsten) was found in which the ontogeny of the genus is admirably exhibited. The specimen presents an opportunity for a more thorough description than Collet gave, and since the validity of the genus has been doubted by most students of the *Pulchelliidae*, it has seemed worth while to record in detail the features exhibited by this specimen.

Karstenia lindigi (Karsten)

1856. *Ammonites lindigii* Karsten. Über die geognostischen Verhältnisse des westlichen Colombien, der heutigen Republiken Neu-Granada und Ecuador. Amt. Ber. Naturf. Gesell. Wien, 32te Vers., 1856: 108. *pl. 3, f. 3.*

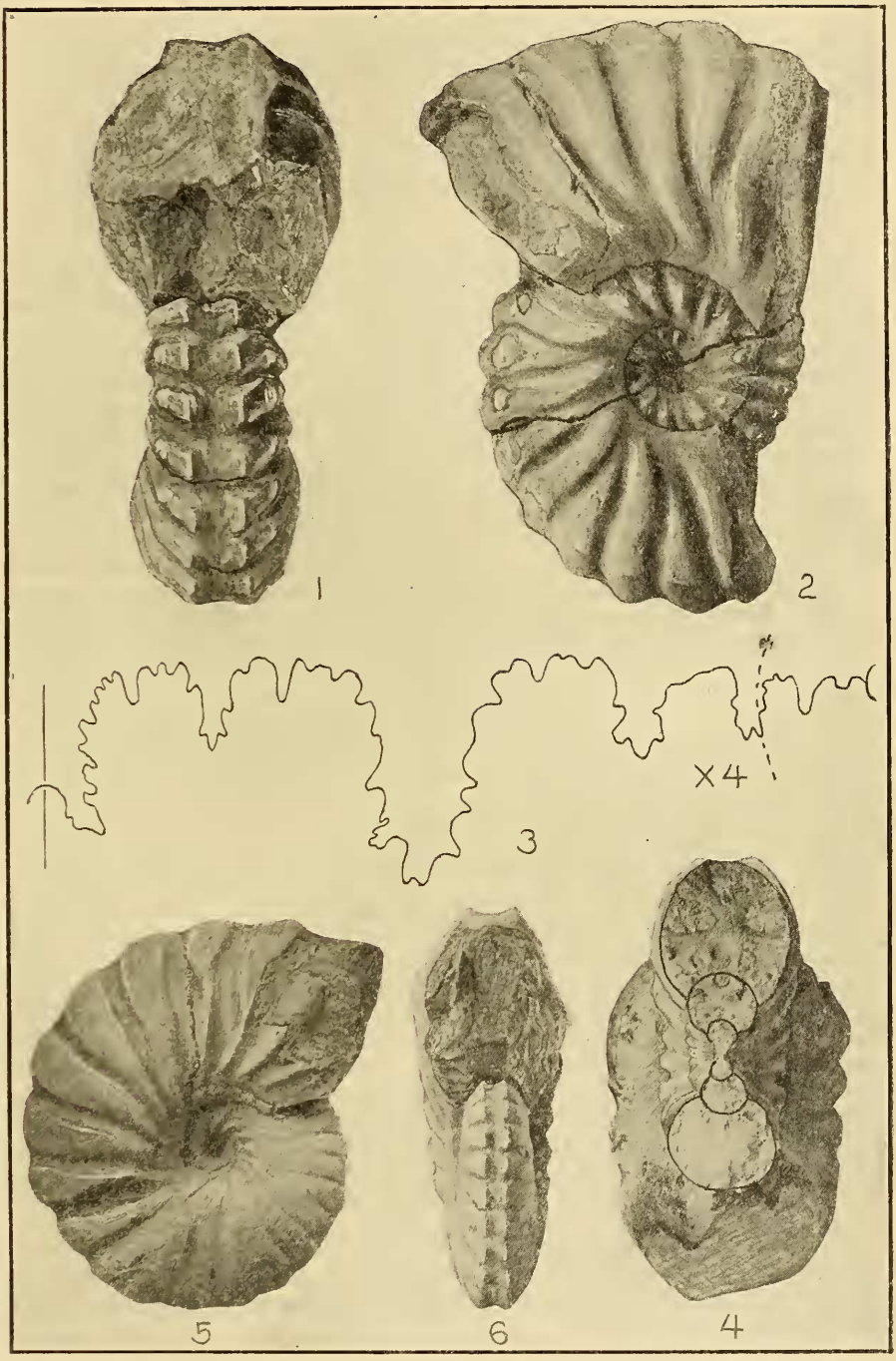
1883. *Pulchellia lindigi* (Karsten). V. Uhlig. Die Cephalopoden der Wernsdorfer Schichten. Denkschr. naturw. Classe. k. k. Akad. Wiss. **46**: 125. *pl. 20, f. 6.*

1886. *Ammonites lindigii* Karsten. H. Karsten. Géologie de l'ancienne Colombie Bolivarienne, Vénézuela, Nouvelle-Grenade et Ecuador. *Pl. 3, f. 3.* Berlin.

1903. *Carstenia lindigi* (Karsten). A. Hyatt. Pseudoceratities of the Cretaceous. U. S. Geol. Surv. Mon. **44**: 133–134.

1924. *Carstenia lindigi* (Karsten). L. W. Collet. Sur quelques ammonites du Barrémien de Colombie. Eclogae Geol. Helvetiae **18**: 488. *pl. 15, f. 1–6.* 1924.

Shell attaining a size of about 80 mm.; moderately involute; whorls stout and nephritic-subcircular in cross section; umbilicus wide and umbilical wall moderately steep, umbilical angle decreasing slightly in each successive whorl. Costae heavy and beginning at the umbilical margin, alternating with costae that arise on the sides slightly above the umbilical shoulder, the latter also rarely starting near the umbilical margin; both separated by deep intercostal furrows slightly narrower than the ribs; both possessing a double row of nodes on each side of the venter; lateral nodes flattened; ventral nodes prominent and elongated in the direction of coiling accompanied by rapid widening of the costae between the two rows of nodes; venter wide, ventral furrow channeling the costae and rarely the intercostal furrows also.



Figs. 1–4.—*Karstenia lindigi* (Karsten). U. S. N. M. cat. no. 73655
Figs. 5–6.—*Pulchellia galeata* (Von Buch). U. S. N. M. cat. no. 73656

At a diameter of 8 mm. the whorl height is about three-quarters of the width; at 12 mm. it is slightly less than equal; at 19 mm. it is equal, and thereafter gradually becomes slightly greater than the width. The dimensions are:

	mm.	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*
Diameter:	8.0	12.0	19.0	29.0	44.0	76.0
Height of whorl:	3.7	6.3	9.0	13.5	20.0	31.5
Width of whorl:	4.5	6.5	9.0	13.0	18.0	28.5

At a diameter of 19 mm. the costae are seen beginning at the umbilical margin, they bifurcate on the sides slightly above the umbilical shoulder, the junction being marked by a prominent node. Every third rib does not bifurcate and does not possess a node near the umbilical shoulder. The ribs are prominent and separated by intercostal furrows of slightly greater width than the ribs themselves. The two rows of nodes at the venter are highly protuberant. At a diameter of 41 mm. the front branch of the dichotomous costae has become independent of the rear branch; one rib, generally derived from the front branch, beginning on the sides slightly above the umbilical shoulder and alternating with the other rib, starting at the umbilical margin. The ribs do not alternate on the two sides of the venter. The node at their junction has disappeared and is represented by an elongated prominence on the longer rib, this prominence gradually disappearing on the next whorl; the inner row of nodes at the ventor-lateral margin is still protuberant, the outer row has flattened appreciably, and the costae have become slightly wider than the intercostal furrows. At a diameter of 79 mm. the vestigal prominences at the point of bifurcation of the costae have disappeared entirely, the nodes of the outer ventral row have become highly flattened and the inner row is much less prominent. At this stage of growth the convergence of *Karstenia lindigi* toward *Pulchellia provincialis* and *P. galeatoides* is rather pronounced.

At a diameter of 43 mm. the suture is characterized by the presence of one siphonal lobe and two lateral lobes. The siphonal lobe is approximately three times as long as it is wide and is indented one-quarter of its length by a U-shaped siphonal saddle. The first lateral saddle is twice as broad as deep. It is divided by a prominent adventitious lobe into unequal halves, of which the inner is slightly larger and broader than the outer. Each half is further divided by one prominent small indentation, and several feebly developed indentations. The first lateral lobe is three times as long as wide, and the sides converge slightly from the base of the lobe to the blunt apex. The second lateral saddle is shallow, a little deeper than broad. The second lateral lobe is very small, about twice as long as wide and trifurcated. In addition there are three small auxiliary lobes and saddles with slightly indented outlines. The suture line, in general, is not deeply dissected.

Locality and horizon.—Barremian at Ubaté, Cundinamarca, Colombia. (U. S. N. M. Mesozoic locality no. 10537, M. A. Rollot collection.)

The form and ornamentation of the specimen described are very similar to those of the figured specimens of Karsten (pl. 3, fig. 3) and Collet (pl. 15, figs. 1–6). In Karsten's illustration the nodes at the point of bifurcation of the costae occur further out from the umbilical shoulder, at approximately

the middle lateral line. Karsten's illustration of *Ammonites caicedi* (pl. 3, fig. 2) would indicate that this species is closely related to *Karstenia lindigi*. It has a higher degree of involution than *Karstenia lindigi*, the ventral channel is wider, the outer row of ventral nodes is less pronounced in specimens of the same size, the nodes at the point of bifurcation of the costae are closer to the umbilicus, the costae are heavier and broader, and the whorl section is more compressed near the venter.

As previously remarked, the adult forms of *Karsenia lindigi* have the general appearance of *Pulchellia provincialis* and *P. galeatoides*. However, in these two species of the *Pulchellia* the ontogeny is characterized by the development at some stage of compressed whorls that become gradually stouter, whereas *Karstenia lindigi* is characterized by stout whorls that become slightly compressed in the mature individuals.

The morphological features of the specimes of *Karstenia lindigi* examined by the writer, as well as other specimens referred to the genus *Karstenia* by other writers, do not justify the alienation of Hyatt's family *Heinziidae* from the family of the *Pulchelliidae*.

BOTANY.—*A singular new* Dryopteris *from Colombia.*[1] William R. Maxon, U. S. National Museum.

In the course of recent work upon South American ferns, the curious Colombian plant (*André* 3497) here discussed was met with in material from the herbaria of the Field Museum of Natural History, the New York Botanical Garden, and the Royal Botanic Gardens, Kew. It had been distributed as *Aspidium munitum* Kaulf. [*Polystichum munitum* (Kaulf.) Presl, a Pacific coast species of temperate North America], an identification suggested presumably by the polystichoid form of the pinnae; but it belongs to the genus *Dryopteris* and is nearly related only to a Colombian species, *D. longicaulis* (Baker) C. Chr., previously described and figured. It may be known as

Dryopteris cornuta Maxon, sp. nov.

Rhizome epigeous, slender and greatly elongate (15 cm. long in incomplete material at hand), rampant or rigidly ascending, woody, 6–8 mm. thick, deeply sulcate, light brown, lustrous beneath a dense covering of short spreading griseous hairs, obliquely paleaceous, the scales loosely imbricate, 5–6 mm. long, subulate from a subcucullate thickened lance-triangular base (here 1 mm. broad), broadly attached, bright brown, firm, rigidly griseous-puberulous on the surfaces, similarly ciliate. Fronds few, alternate, rigidly

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